

## RESPONSES TO DTSC COMMENTS ON THE FEASIBILITY STUDY AND REMEDIAL ACTION PLAN

*Prepared for:*

**Pechiney Cast Plate, Inc.**

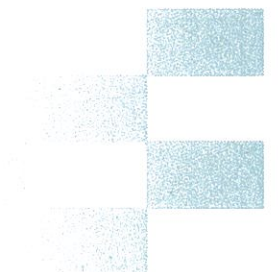
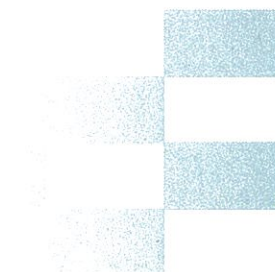
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Project No. 10627.003.0





**RESPONSES TO DTSC GSU COMMENTS (dated November 16, 2011)  
ON THE FEASIBILITY STUDY (REDLINE 07/27/11) AND REMEDIAL ACTION PLAN (REDLINE 07/27/11)  
Former Pechiney Cast Plate, Inc. Facility  
3200 Fruitland Avenue  
Vernon, California**



DTSC GSU SPECIFIC COMMENTS AND RECOMMENDATIONS	RESPONSE
<p>GSU #1. FS, Section 5: This section states that “the concentrations of these compounds in groundwater beneath the northern portion of the Site will likely decrease over time by mitigating VOC impacted soil in the Phase I area and implementing a Monitored Natural Attenuation Program for these COCs in groundwater”. While the author may concur with this statement conceptually, no viable approach was proposed within the FS document itself. It should be noted that EPA does not consider Monitored Natural Attenuation (MNA) a ‘no’ action alternative, rather a proposed remedy which should be scoped and evaluated like any other remedy. There should be supporting data and a demonstration that MNA is the best alternative for the Site.</p> <p>Current federal guidelines for chlorinated volatile organic compounds (CVOC) (EPA 1998, 1999) identify three tiers of site-specific information or “lines of evidence” to evaluate the efficacy of MNA as a potential remedy. These lines of evidence are summarized as follows:</p> <p>-First Line of Evidence. Historical groundwater data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time/distance and the presence of daughter products at appropriate monitoring points.</p> <p>-Second Line of Evidence. Hydrogeologic and geochemical data that can be used to demonstrate indirectly the type(s) of natural attenuation processes at the site and the rate at which such processes will reduce contaminant concentrations to required levels.</p> <p>-Third Line of Evidence. Other information, such as data from field or microcosm studies, which directly demonstrates or quantifies the occurrence of a particular natural attenuation process and its ability to degrade contaminants of concern.</p> <p>According to the USEPA (1999), the monitoring program designed for each site should specify the location, frequency, and types of samples and measurements necessary to evaluate if the remedy is performing as expected, and if it is capable of attaining remediation objectives. In addition, all monitoring programs should be designed to accomplish the following goals:</p> <ol style="list-style-type: none"> <li>Demonstrate that natural attenuation is occurring according to expectations;</li> <li>Detect changes in environmental conditions (e., hydrogeologic, geochemical, microbiological, or other changes) that may reduce (or enhance) the efficacy of the natural attenuation processes;</li> <li>Identify any potentially toxic and/or mobile transformation products;</li> <li>Verify that the dissolved contaminant plume is not expanding;</li> <li>Verify that there has been no unacceptable impact to downgradient receptors;</li> <li>Detect new releases of contaminants to the environment that could create an unacceptable risk to receptors or impact the effectiveness of the natural attenuation remedy;</li> </ol>	<p>As discussed during our June 1, 2009 meeting with DTSC and presented in our June 23, 2009 response to DTSC’s comments, the monitored natural attenuation (MNA) approach to mitigate volatile organic compounds (VOCs, mainly trichloroethene [TCE]) in groundwater beneath the Site and rationale for implementation of the MNA approach was discussed. As noted in our June 23, 2009 response to DTSC comments, groundwater directly beneath the Site contains TCE at concentrations above the maximum contaminant level (MCL), and based on Site data and the reported groundwater flow direction, there are at least three potential sources of TCE in groundwater as described below. [Note – groundwater flow direction at the Site and in the site vicinity were reported to the west-northwest<sup>1,2</sup>]. Since the meeting, additional information has been compiled regarding TCE in groundwater in the site vicinity, and for completeness this information is also included below.</p> <ol style="list-style-type: none"> <li><u>Northwest portion of the Site:</u> TCE impacts to groundwater in this portion of the Site may be attributed, to some degree, to historical manufacturing operations in the northwestern portion of the Site (e.g. Building 106; Figure 1). This statement is based on the detection of TCE and other VOCs in the northwest portion of the Site in soil, soil vapor, and groundwater samples. In this area of the Site, TCE was detected in hydropunch groundwater samples at concentrations ranging between 71 and 420 micrograms per liter (µg/L; Table 1). Further, as proposed in the Draft RAP, VOC-impacted soil in this area of the Site will be mitigated using soil vapor extraction (SVE). Therefore, as the vadose zone source area is mitigated, TCE concentrations in groundwater should decrease (attenuate) with time.</li> <li><u>Off-site Source(s) to the south, southeast, and southwest:</u> TCE impacts to groundwater in the southern portion of the Site, near the former Stoddard solvent underground storage tanks (USTs), may be attributed to an off-site source or sources. This statement is based on the fact that TCE or other related VOCs were not detected in soil and soil vapor samples collected in the southern portion of the Site. Historical records reviewed at the Regional Water Quality Control Board (RWQCB) and on GeoTracker<sup>2</sup>, suggest the presence of several off-site sources including the former Bethlehem Steel site, located upgradient of the Site (just south of Slauson Avenue – aka Vernon Parcels/Lots) and the former Trico site located southwest of the intersection of Boyle Avenue and Slauson Avenue. In addition, detected concentrations of the chlorinated VOCs, 1,2-dichloroethane (1, 2-DCA), chloroform, and TCE in groundwater in the southern portion of the Site (former monitoring wells AOW-3 and AOW-7 and existing monitoring wells AOW-8, and AOW-9) have decreased (attenuated) since the initial sampling event in 1990 (see Table 1 and Figure 1).</li> </ol> <p>Since the June 2009 meeting, a groundwater sampling event was conducted at the Site in May 2011; the results of that sampling event were included in Appendix A of the Draft FS and summarized on Table 1. Based on the May 2011 sampling event, the decrease in groundwater concentrations noted above (for 1,2-DCA, chloroform, and TCE) is further supported by the reduction in groundwater sample VOC concentrations, including TCE, to non-detected levels at monitoring well AOW-8 located in the southern portion of the site. This reduction in VOC concentrations to non-detected levels further supports the applicability of natural attenuation of VOCs in groundwater at the Site because it appears to be occurring in the southern portion of the Site.</p> <ol style="list-style-type: none"> <li><u>Off-site source(s) to the east:</u> TCE impacts to groundwater may be present to the east of the site, beyond Alcoa Avenue. This is based on historical groundwater data collected from a former Alcoa monitoring well AOW-4 (Table 1), which was located in the northeast corner of the original Alcoa property (Figure 1) near the intersection of Alcoa Avenue and Fruitland Avenue. During previous monitoring events, TCE was detected in the groundwater samples from monitoring well AOW-4 at concentrations up to 220 µg/L (Table 1), indicating the presence of another potential regional source of TCE in groundwater east of the Site.</li> </ol> <p>During the June 1, 2009 meeting with DTSC and outlined in our June 23, 2009 response to comments we provided the rationale for utilizing the MNA approach for groundwater at the Site. To recap, the MNA approach is applicable to the Pechiney Site for the following reasons:</p> <ul style="list-style-type: none"> <li>presence of low concentrations of chlorinated VOCs, with the concentration of TCE ranging between 3 and 420 µg/L, in groundwater samples collected beneath the Site;</li> </ul>

<sup>1</sup> Based on Section 2.3.2.2 (Hydrogeology) of the Draft FS, the groundwater flow direction at the Site was reported as west-northwest and the regional groundwater flow direct in the vicinity is to the west (**See TAB 1**).

<sup>2</sup> The groundwater flow direction reported for other properties in the site vicinity were listed as west to northwest (Environmental; Audit, Inc., February 2009, Fourth Quarter Ground Water Monitoring and Remediation Report – Northern Parcel, 2911 East Slauson Avenue, Huntington Park, CA; GeoTracker, February 2012).



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<p>g) Demonstrate the efficacy of institutional controls that were put in place to protect potential receptors; and</p> <p>h) Verify progress toward attainment of cleanup objectives.</p> <p>Based on the above, it does not appear as if the viability of MNA for this site has been adequately demonstrated. However, given the known source removal activities and historical groundwater sampling efforts, DTSC is willing to consider MNA as a potential remedy provided that adequate background information is provided to support a detailed MNA proposal. Therefore, the FS should be revised to include a detailed MNA proposal along with a more robust and detailed sampling and analysis plan, completed with laboratory analytical methods (e.g. 8260b).</p> <p>Additionally, the author has included a few EPA reference documents below, and refers the document developer to the ITRC website for additional approaches to developing MNA programs.</p> <p>-EPA. 1998. Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. EPA/600/R-98/128, U.S. Environmental Protection Agency, Office of Research and Development, Washington D.C.</p> <p>-EPA. 1999. Use of Monitored Natural. Directive Number 9200.4 17P, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.</p> <p>-EPA. 2004a. Performance Monitoring of MNA Remedies for VOCs in GroundWater. EPA 600-R-04-027. U.S. Environmental Protection Agency, Washington, D.C.</p> <p>-Characterization and Monitoring of Natural Attenuation of Chlorinated Solvents in Ground Water: A Systems Approach, August 2006, Washington Savannah River Company, Savannah River Site.</p>	<ul style="list-style-type: none"> <li>• depth at which groundwater was observed (about 150 feet below grade) limits potential exposure to TCE by inhalation through potential vapor intrusion or dermal contact with groundwater;</li> <li>• observed reduction (attenuation) in chlorinated VOC concentrations in groundwater samples collected in the southern portion of the site (wells AOW-3, AOW-7, AOW-8 and AOW-9);</li> <li>• remediation proposed for an on-Site source of chlorinated VOCs in the northwestern portion of the site (source removal proposed by SVE);</li> <li>• the presence of other source(s) of TCE in groundwater in the site vicinity (regional impacts); and</li> <li>• issuance of a land use covenant to restrict the use of on-site groundwater within the first water-bearing unit.</li> </ul> <p>Based on our discussion during the June 1, 2009 DTSC meeting, DTSC agreed that a MNA remedial approach for groundwater could be applied to the Site, and to support the MNA approach one additional groundwater monitoring well would be installed in the northwestern portion of the Site. It was further discussed that the data needed to support the MNA approach would be collected during implementation of below grade demolition and remediation work at the Site after the installation of the new well. As such, Section 7.2.1 (Groundwater Monitoring Wells, <b>see TAB 16</b>) of the September 2009 Draft RAP and July 2011 Draft RAP, included the a description of the installation of a new well and that the new well along with the existing three groundwater monitoring wells (AOW-6, AOW-8, and AOW-9) would be used to confirm the groundwater flow direction (west-northwest) and to periodically collect groundwater data necessary to support the MNA approach. This section also noted that the implementation of the work would occur during the below grade demolition and remediation work at the Site.</p> <p>Also, Section 7.2.1 of the Draft RAP (Groundwater Monitoring Wells, <b>see TAB 16</b>) states that “....groundwater samples will be periodically monitored for VOCs and natural attenuation parameters. After the initial testing is complete, a sampling schedule and suite of analysis will be provided to DTSC for future sampling events.” However, based on DTSC’s comment, Section 7.2.1 of the Draft RAP will be updated to include the details of the MNA program for the VOC-impacted groundwater in the northern portion of the Site, as follows.</p> <ul style="list-style-type: none"> <li>• After the installation of the new groundwater monitoring well, the groundwater monitoring well will be surveyed and developed. Well development will be conducted using surge and bail methods. Field groundwater quality parameters (pH, temperature, specific electrical conductance [SEC], and turbidity) will be measured and recorded periodically to assess the progress of development. Development will continue until stabilization of field groundwater quality parameters, and when the water is relatively clear and free of suspended sediment. A minimum of three saturated well volumes (saturated screen plus filter pack void space) will be removed from the well during development.</li> <li>• The new well along with three existing on-site groundwater monitoring wells (AOW-6, AOW-8, and AOW-9) will be monitored on a quarterly basis for the first year. The frequency of monitoring events may be modified pending evaluation of data collected over several sampling events.</li> <li>• Prior to purging and sampling, water levels will be measured in each groundwater monitoring well to evaluate the hydraulic gradient across the site.</li> <li>• The groundwater monitoring well network will be purged using a submersible pump and sampled using a bailer. Field parameters including pH, specific electrical conductance [SEC], temperature, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity will be monitored during purging and sampling activities.</li> <li>• Groundwater samples will be collected and analyzed for the following constituents to monitor and assess the viability of MNA: <ul style="list-style-type: none"> <li>- VOCs using U. S. EPA Method 8260B,</li> <li>- calcium, magnesium, manganese, sodium, and potassium, using U.S. EPA Method 6010B</li> <li>- Total Kjeldahl Nitrogen (as N) using Standard Method 4500-NH3 C,</li> <li>- ammonia (as N) using Standard Method 4500-NH3 D,</li> </ul> </li> </ul>



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	<ul style="list-style-type: none"> <li>- chloride using Standard Method 4500-Cl-C,</li> <li>- total alkalinity (as CaCO<sub>3</sub>) using Standard Method 2320B, total sulfide using Standard Method 4500S-D,</li> <li>- total phosphorus using Standard Method 4500 E,</li> <li>- dissolved iron using U.S. EPA Method 200.7,</li> <li>- iron (II) using Colorimetric Hach Method 8146,</li> <li>- methane, ethane, and ethene, using RSK-175M,</li> <li>- nitrate, nitrite, organo-phosphate, and sulfate, using U.S. EPA Method E300, and</li> <li>- total organic carbon using Standard Method Standard Method 5310B.</li> </ul> <ul style="list-style-type: none"> <li>• Field QA/QC samples including equipment rinsate blank, temperature blank, and trip blank samples used to assess field precision and accuracy will be collected at a frequency as described in the Quality Assurance Project Plan (QAPP) (Geomatrix, 2007).</li> <li>• Laboratory QA/QC samples including laboratory duplicate samples, laboratory control samples, matrix spike/matrix spike duplicates used to assess laboratory precision and accuracy will be collected and prepared at a frequency described in the QAPP (Geomatrix, 2007).</li> </ul>
<p>GSU #2. The FS identifies that the offsite vapor concentrations exceed indoor air standards, and the contaminant vapor plume does not appear to be fully delineated. While DTSC recognizes the potential for comingling contaminant sources, the Site owner is still responsible for characterizing the full extent of the site derived contamination, and for demonstrating their contribution to the comingled plume. This issue needs to be resolved. The author recommends a meeting between DTSC and all interested parties, to discuss a follow up plan of action for supplemental vapor plume characterization.</p>	<p>The extent of the site-derived soil vapor impacts has been sufficiently assessed to support the proposed remedy for the northwestern portion of the Site (also referred to as the Phase I area). The proposed remedy for VOCs in soil and soil vapor in this portion of the Site, as presented in the Draft RAP, includes the placement of shallow and deep soil vapor extraction (SVE) wells on-site near the site boundary to address site-derived VOCs in soil vapor along Fruitland and Boyle Avenues directly adjacent to the Site (for Figures 6 and 7 of the Draft RAP, <b>see TAB 23 and TAB 24</b>). The anticipated radius of influence, although conservatively estimated as 60 feet (shallow zone) and 85 feet (deep zone), will capture site-derived VOCs (e.g., TCE) in soil vapor along Fruitland and Boyle Avenues, along with VOCs associated for other off-site sources.</p> <p>Based on the off-site soil vapor testing conducted in July 2009 (discussed in Section 3.6 of the Draft FS [<b>see TAB 2</b>], data included in Appendix A of Draft FS [<b>see TAB 12</b>], and attached as Table 2 for reference), the sample results indicated the following:</p> <ul style="list-style-type: none"> <li>• TCE and PCE were detected in all shallow soil vapor samples (locations #161 through #164) at depths of 5 and 15 feet. Other VOCs, 1,1,1-trichloroethane (1,1,1-TCA; #163 at 15 feet) and 1,1-dichloroethene (1,1-DCE; #164 at 15 feet) were detected in only one sample each. No other VOCs were detected.</li> <li>• TCE soil vapor concentrations decreased to the north, northwest (with the exception of the 15-foot sample at #164), and west of the Site, while the PCE soil vapor concentrations increased. TCE and PCE soil vapor concentrations also increased with depth. Assuming the suspected on-site source area for the site-derived TCE is present in the northwest corner of the Site, a threefold decrease in the concentration of TCE in soil vapor was measured between the on-Site sample location #81 and the off-site sample location #162, approximately 60 feet north. This reduction in concentration was also observed to the west between on-Site sample location #82 and off-site sample location #164. Based on this observation, the site-derived VOCs will continue to decrease at further distances from the Site and co-mingle with other source(s) in a highly industrial area.</li> <li>• The detected concentrations of TCE and PCE exceed risk-based screening levels (RBSLs) for indoor inhalation exposures to commercial/industrial workers, while the detected concentrations of 1,1,1-TCA and 1,1-DCE are well below their respective RBSLs. As discussed in Sections 4.1.1, 4.2.2, and 4.2.3 of the Draft FS (<b>see TAB 3, TAB 5 and TAB 6, respectively</b>), the RBSLs are considered protective of potential exposures to indoor workers at adjacent commercial/industrial facilities near the off-site sample locations, and outdoor utility workers performing trench work (semi-confined air space) in Fruitland or Boyle Avenues.</li> </ul>



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	<ul style="list-style-type: none"> <li>The highest PCE soil vapor concentration was detected at the furthest point from the Site on Fruitland Avenue (at sample point #163, see Figure 2). At this sample location, the TCE concentration in the 15-foot sample also was higher than the 15-foot sample results obtained for TCE at the two off-site sample locations (#162 and #164) closer to the Site. The higher PCE concentrations at the off-site sample location suggest the presence of an off-site source or sources. For example, sample point #163 is approximately 140 feet northwest of the Site, and approximately 300 feet east of the former Detrex Chemical facility (a former solvent recycling facility that was located on Fruitland Avenue and listed with a land use deed covenant<sup>3</sup>). At this former facility, a soil removal action was conducted in 2001 to a depth of 20 feet in a localized area that exhibited elevated concentrations of PCE in soil (1100 milligrams per kilogram at 4 feet) and soil vapor (34 milligrams per liter at 20 feet). Other VOCs, TCE and 1,1,1-TCA, also were detected but at a much lower concentrations. In addition, a recent investigation conducted by Tetra Tech Inc.<sup>4</sup> at a facility located on Fruitland Avenue, approximately 700 feet west of the Site also identified PCE and TCE in soil vapor. At this facility, PCE and TCE were detected in soil vapor at 5 and 20 feet below grade at concentrations up to 100 µg/L, with the highest concentration reported for PCE in a hazardous materials storage area.</li> <li>Calculated molar ratios of PCE to TCE (0.10 and 0.42) are an order of magnitude higher at three of the off-site soil vapor sample locations (#162, #163, and #164). The molar ratios calculated for the on-site samples located in the suspected on-site source area ranged between 0.01 and 0.087. The distribution of PCE to TCE is presented graphically on Figures 2 and 3. The PCE to TCE molar ratios further suggest the probability of an off-site source or sources of PCE and TCE in the vicinity of the off-site sample locations #162, #163, and #164.</li> </ul> <p>Based on the proposed remedy (SVE) for the northwestern portion of the Site, the attenuation of TCE concentrations in soil vapor with distance from the Site, and the presence of off-site source(s) indicate that further off-site investigations are not warranted.</p>
GSU #3. FS: It appears that additional groundwater monitoring wells will be necessary to complete delineation of the contaminant plume. It may be possible to utilize offsite locations, if available, to confirm groundwater flow direction. This issue can be further discussed at the DTSC meeting suggested in comment #2.	As discussed earlier under response to GSU comment #1, the groundwater flow direction at the site and in the site vicinity were reported to the west-northwest. One additional groundwater monitoring well will be installed in the northwest corner of the site and it will be used along with the existing on-site monitoring wells to confirm the groundwater flow direction.
GSU #4. RAP: The document states that U.S. EPA's conditional approval of the PCB remediation goals was granted on July 1, 2011. The author concurs with the overall approach of source removal action(s) and defers the risk evaluation portion of the review to the DTSC toxicologist.	Comment noted.

<sup>3</sup> EnviroStore, February 2012

<sup>4</sup> Tetra Tech, Inc., May 2011, Site Investigation Report, Vernon/Commerce Discovery Project, Phase I Sites, Vernon, Commerce, Maywood and Huntington Park, California, obtained from EnviroStore, February 2012.



**RESPONSES TO DTSC ENGINEERING COMMENTS (DATED DECEMBER 20, 2011)  
ON FEASIBILITY STUDY (REDLINE DATE 7/27/2011) AND REMEDIAL ACTION PLAN (REDLINE DATE 7/27/2011)  
FOR FORMER PECHINEY CAST PLATE SITE, VERNON, CALIFORNIA  
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DTSC REVIEWED DOCUMENTS	RESPONSE
<ol style="list-style-type: none"> <li>1. Revised Draft Feasibility Study (Redline Date: July 27, 2011), text only.</li> <li>2. Revised Draft Remedial Action Plan (Redline Date: July 27, 2011), text only.</li> <li>3. Memorandum from Christine Bucklin (DTSC), dated April 5, 2010, containing a geologic/hydrogeologic review of the FS and RAP and with an email from Michel Iskarous to Linda Conlan, dated May 11, 2010, containing DTSC technical comments on the RAP.</li> </ol>	
DTSC ENGINEERING COMMENTS	
<p>ENG #1. References to the Imminent and Substantial Endangerment Determination and Consent Order (I&amp;SE Order) were added to both the FS and RAP. The I&amp;SE Order did not appear to directly require any revisions to the FS or RAP. However, some FS and RAP text may have been revised or added to be consistent with the project descriptions in the I&amp;SE Order. For example, FS Section 3.1 (page 9) concerning Stoddard solvent impacts and added RAP Sections 7.6 Land Use Covenant and 7.7 O&amp;M Agreement and Plan.</p>	<p>For the record the FS and RAP were updated to reflect the issuance of the Imminent and Substantial Endangerment Determination and Consent Order.</p>
<p>ENG #2. Both the FS and RAP refer to the Polychlorinated Biphenyls Notification Plan (PCBNP, 2009), additional PCB sampling, and U.S. Environmental Protection Agency (USEPA) conditional approval of the PCB remediation goals. There are extensive revisions to the FS and RAP related to PCBs for site characterization, health risk evaluations, remediation goals, and remedial alternatives. The completeness or adequacy of these revisions could not be evaluated because the PCBNP, subsequent PCB-related documents, and complete copies of the FS and RAP were not provided. The PCB-related revisions appear to have been made consistently in the FS and RAP.</p>	<p>Elements of the Polychlorinated Biphenyls Notification Plan (PCBNP, 2009), also referred to as the risk-based application, were extracted from the July 2008 and September 2009 FS and RAP previously reviewed by DTSC. The risk-based application included information related to PCBs with respect to site background, PCB concentration data, previous PCB soil removal actions, risk assessment approach and development of the risk-risk based screening levels (RBSLs), establishment of remediation goals for soil and concrete, and the proposed PCB remediation plan for the site. In addition, the findings of the additional PCB sampling required by U.S. EPA, revisions to the risk assessment based on the additional PCB testing and congener evaluation, revisions to the PCB modeling approach, and reduction of the PCB concrete and soil remediation goals were submitted to DTSC on January 5, 2011. In addition, USEPA's conditional approval of the risk based application dated July 1, 2010 and PCB remediation goals dated July 2, 2011 were also provided to DTSC. Complete copies of the FS and RAP (including appendices) were submitted to DTSC on July 27, 2011, which are attached to this response package.</p>
<p>ENG #3. There does not appear to be much revision (redline text) in the FS in response to Christine Bucklin's first comment concerning an evaluation of trichloroethene contamination off-site in the vicinity of Fruitland and Boyle Avenues. The off-site soil vapor survey is discussed in FS sections 3.4, 3.6, and 4.1.4. The rest of Ms. Bucklin's comments did not require revisions of the FS or RAP.</p> <p>Several of the comments apparently will be addressed through the startup testing reports discussed in RAP sections 7.3.5, 7.3.7, and 7.4.5. Although the RAP describes these startup reports, the RAP does not indicate that an engineering design document for the selected remedy will be submitted to DTSC for review.</p>	<p>Please see our response to Christine Bucklin's November 16, 2011 Specific comment GSU #2 regarding the off-site soil vapor information provided on page 3 of this response package.</p> <p>The proposed remedies outlined in the Draft RAP are presumptive, and the Draft RAP as written provides sufficient design criteria for the installation of the soil vapor extraction (SVE) and SVE/bioventing systems, thereby eliminating the need to prepare a separate engineering design document. As presented in the Draft RAP, site preparation, power requirements, well installation details, piping requirements, and treatment system equipment specifications for the SVE system in the Phase I area are outlined in Sections 7.3.1, 7.3.2, 7.3.3 and 7.3.4 (<i>see TAB 17 and TAB 18</i>), and for the SVE/bioventing system for the Phase III/IV areas are outlined in Sections 7.4.1, 7.4.2, 7.4.3, and 7.3.4 (<i>see TAB 19 and TAB 20</i>). In both cases the treatment system will consist of a trailer or skid-mounted South Coast Air Quality Management District [SCAQMD] Various Locations permitted unit. In addition, Figure 8 provides the details of the wellhead design and well construction requirements, and Figures 9, 10 and 12 present the SVE process flow diagram, piping and instrument diagram, and bioventing process flow diagram, respectively.</p> <p>In addition, the contract for the SVE system and SVE/bioventing system will be a design/build contract, and the selected contractor will field engineer the system during construction.</p>



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Vernon, California**

DTSC REVIEWED DOCUMENTS	RESPONSE
<p>ENG #4. The email to Ms. Linda Conlan, dated May 11, 2010, says the technical comments are on the draft FS report, but the section numbers and information correspond to the draft RAP.</p> <p>a. Text describing addition of a vacuum gauge port and tap for insertion of a hotwire anemometer has been added to RAP sections 7.33 and 7.42.</p> <p>b. The RAP Table of Contents indicates that figures were added for "Extraction Wellhead and Well Construction Detail (Side View)" and "Piping and Instrumentation Diagram."</p> <p>c. RAP section 7.3.2 does not appear to have been revised to provide the activities included in the area of influence evaluation. However, RAP section 7.3.5 has been renamed "Startup Testing" and includes additional text describing the area of influence test. The monitoring schedule for a step-vacuum test is described as being provided in a new Table 3 "SVE and Respirometry Startup Plan."</p> <p>d. RAP section 7.3.2 does not appear to have been revised to discuss a report to be submitted to DTSC that describes the completed area of influence evaluation. However, RAP section 7.3.5 has additional text that describes this report.</p> <p>e. As requested by DTSC, RAP section 7.3.5 renamed "Startup Testing" includes new text describing the report requested by comment 4 in DTSC's May 11, 2010 email to Ms. Conlan. The description of the report includes the additional information requested by comment 5 in DTSC's May 11, 2011 email, except for pulse mode operation for the SVE. RAP section 7.3.7 also indicates that the rebound testing process will be documented in the report. RAP section 7.4.5 renamed "Startup Testing" has new text providing similar SVE reporting for the Stoddard solvent-impacted area and the requested reporting information for in-situ respiration testing for bioventing.</p> <p>f. The RAP does not appear to specify that the startup testing report will be submitted to DTSC within 60-90 days after completion of startup. RAP section 7.4.6 indicates that remediation monitoring reports will be provided to DTSC on a quarterly basis only during the first year of operation and semi-annually thereafter.</p>	<p>Comments are noted, and require no revisions to the FS or RAP.</p> <p>With respect to the startup testing report noted in comment 4f, it was intended to be part of the remediation monitoring reports identified in Section 7.4.6 of the Draft RAP (<b>see TAB 21</b>). For clarification, the text in Section 7.4.6 will be updated to include the provision that a "start up testing report will be submitted to DTSC with 60 to 90 days after completion of the startup testing."</p>



**RESPONSES TO DTSC ENGINEERING COMMENTS (DATED DECEMBER 20, 2011)  
ON FEASIBILITY STUDY (REDLINE DATE 7/27/2011) AND REMEDIAL ACTION PLAN (REDLINE DATE 7/27/2011)  
FOR FORMER PECHINEY CAST PLATE SITE, VERNON, CALIFORNIA  
Former Pechiney Cast Plate, Inc. Facility  
3200 Fruitland Avenue  
Vernon, California**

DTSC REVIEWED DOCUMENTS	RESPONSE
<p>ENG #5. Although it is reasonable to conclude that PCBs in soil and concrete at the site will attenuate within the 150 feet of vadose zone and not impact groundwater, it is unreasonable and technically inappropriate to illustrate this point using the modeling approach described in the FS (Section 4.3.2). The attenuation factor and assumed concentrations of PCBs necessary to impact groundwater are physical impossibilities. Hence, the approach is flawed and should be revised. A better approach to this problem is to perform the modeling assuming a constant source of PCBs in the vadose zone and run the model until impacts are seen in the groundwater or to a point where vertical migration of PCBs no longer continues. The concentration and volume of the source area defined in the model should be based on site-specific investigation data.</p> <p>Prior to re-running the model the consultant should provide the following information for DTSC review and approval:</p> <p>(1) -Input parameters (e.g. fraction of organic carbon, soil bulk density, percent saturation, effective porosity) and other assumptions for the model, including layer thickness and justification for layer breakouts;</p> <p>(2) -Justification for why the model has been divided into 30 five-foot layers. This number of layers appears excessive and should only be done if there is clear justification from the hydrogeologic data, such as lateral and vertical continuity in lithology or significant variability in aquifer properties;</p> <p>(3) -An explanation as to why PCB transport is assumed to occur in a dissolved phase versus in colloidal form. Colloidal transport and facilitated transport (with VOCs via cosolvency effects) can both greatly enhance migration of highly sorptive compounds, such as PCBs, beyond what is predicted by its sorption coefficient <math>K_d</math>.</p>	<p>For clarification, the PCB attenuation model presented in Section 4.3.2 (<b>see TAB 7</b>) was previously reviewed by DTSC and was deemed acceptable at that time. Further, we disagree with DTSC's assessment that the approach in the FS is unreasonable and technically inappropriate. The difference between the approach suggested by DTSC and the approach presented in the FS is a forward calculation versus a backward calculation, both of which are technically correct. The advantage of the approach outlined in the FS (with the details presented in Appendix D) is that there is no need to assume a concentration for the constant concentration boundary condition based on site-specific data, which may be subject to interpretation. Because the PCB concentrations in the source zone that would result in an impact to groundwater are too high to be physically possible sufficiently demonstrates that PCBs in soil and concrete will not impact groundwater in 500 years projected in the model. Nevertheless, we have no objection to the approach suggested by DTSC, except that the volume of source area is irrelevant for constant concentration boundary condition, which conservatively assumes an infinite source. In addition, we re-ran the model using DTSC's suggested approach, and the results of the model are provided at the end of our response to this comment.</p> <p>Some of the information requested by DTSC in this comment is presented in the Appendix D of the FS (<b>see TAB 14</b>), but for clarity, the information is outlined below.</p> <p>1. <i>Input parameters (e.g. fraction of organic carbon, soil bulk density, percent saturation, effective porosity) and other assumptions for the model, including layer thickness and justification for layer breakouts.</i></p> <p>The following model parameters are listed in Appendix D to the FS, and are repeated below.</p> <ul style="list-style-type: none"> <li>• Soil bulk density, <math>\rho = 96</math> pounds per cubic feet</li> <li>• Porosity, <math>n = 0.40</math></li> <li>• Soil organic carbon content, <math>f_{oc} = 0.39\%</math></li> <li>• Sorption partition coefficient for PCBs, <math>K_{oc} = 309,000</math> liters per kilogram</li> </ul> <p>Percent saturation for each layer is calculated by the MODFLOW-SURFACT code based on the unsaturated zone (van Genuchten's) parameters and the initial head, which is the groundwater elevation. The development of unsaturated zone parameters is explained in Appendix D of the FS. The initial percent saturation is presented in the attached Table 3.</p> <p>In addition, the PCB concentration for the constant concentration boundary condition will be assumed to be 0.7 milligrams per liter (mg/L), which is PCB's solubility limit, as a conservative assumption.</p> <p>Layer thickness and layer breakouts are explained in Appendix D of the FS, and are further explained below.</p> <p>2. <i>Justification for why the model was divided into 30 five-foot layers. This number of layers appears excessive and should only be done if there is clear justification from the hydrogeologic data, such as lateral and vertical continuity in lithology or significant variability in aquifer properties.</i></p> <p>As explained in the modeling appendix, the lithologic profile used in the MODFLOW-SURFACT model was based on the lithologic logs of on-site Borings 125 and 126. Soil samples were collected from these two borings at 5-foot interval for estimation of weight percentage of gravel, sand, silt, and clay, which are used as inputs for development of unsaturated zone parameters. Using the 5-foot interval as a uniform layer thickness, results in 30 layers for the 150-foot vadose zone. We do not disagree with DTSC that some adjacent layers with similar lithology may be combined to reduce the number of layers. However, since the lithologic data are readily available at 5-foot intervals and the 1-D model run time is relatively short (3 minutes for a simulation period of 500 years), we believe the benefit of having refined layering outweighs the small cost of computational time.</p>



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<p>(DTSC Comment ENG #5 cont'd)</p>	<p>3. <i>An explanation as to why PCB transport is assumed to occur in a dissolved phase versus in colloidal form. Colloidal transport and facilitated transport (with VOCs via cosolvency effects) can both greatly enhance migration of highly sorptive compounds, such as PCBs, beyond what is predicted by its sorption coefficient K<sub>d</sub>.</i></p> <p>Colloid-facilitated transport or cosolvency effects are not accounted for in the PCB transport modeling in the FS for the following reasons, which was also included in our response to U.S. EPA regarding or cosolvency effects.</p> <ul style="list-style-type: none"> <li>Although literature has suggested that colloid-facilitated transport or cosolvency effects may enhance the transport of certain compounds, quantitative relationships that are required for transport modeling are still mostly at research stage and have not been established well enough for use in practice. For example, even a state-of-the-art modeling programs such as MODFLOW-SURFACT does not have the ability to vary sorption partition coefficients or solubility of PCBs to cosolvent concentrations or to simulate colloid transport.</li> <li>The additional data that are needed to simulate colloid-facilitated transport or cosolvency effects, for example colloid concentration, sorption coefficients to colloids, and variation of sorption coefficient or solubility to cosolvent concentrations, are beyond what is typically collected during site investigation at most sites.</li> <li>Most of the solvents are not expected to have substantial impact on the migration of PCBs. Although research has shown that sorption of hydrophobic organic chemicals (HOCs) such as PCBs can decrease in the presence of some solvents, such cosolvent effects are measurable only under two conditions: <ul style="list-style-type: none"> <li>a. When the solvents are completely miscible with water; or</li> <li>b. When polar partially miscible organic solvents are present in concentrations on the order of a few percents by volume.</li> </ul> <p>On the other hand, the cosolvents that are neither polar nor completely miscible in water, such as TCE, toluene, and <i>p</i>-xylene, have little effect on the sorption of HOCs. (Haasbeek, 1994; Rao et al., 1990; Pinal et al., 1990)<sup>1,2,3</sup> Because most of the solvents at the site belong to nonpolar partially miscible organic solvents and exist at relatively low concentrations (i.e. far less than a few percents by volume), they are not expected to have substantial impact on the migration of PCBs.</p> <p>To address DTSC's concerns about colloid-facilitated transport or cosolvency effects, we performed sensitivity analysis simulations where the retardation factor for PCBs is reduced by one order of magnitude (i.e., 10 percent of the value). The simulated concentration profiles over time for PCBs in soil at depths of 15, 30, and 45 feet below ground surface (bgs) are shown on Figures 4, 5, and 6, respectively. Although changing the retardation rate increases the migration rate of PCBs through the soil column, the resulting increased migration rate is still not fast enough to cause an impact to groundwater.</p> <p>In addition, we repeated the PCB attenuation model using the forward simulation approach suggested by DTSC and the modeling parameters noted above and in the Draft FS. The model was re-run for PCBs in soil at depths of 15, 30 and 45 feet bgs (see Figures 4, 5, and 6). At all three depths, the modeled PCB concentrations in soil are reduced to non-detect levels at a shallow depth regardless of the duration.</p> <p>Neither the sensitivity analysis nor the forward simulation modeling results changed the conclusion of the modeling presented in the FS. Therefore, PCBs in soil that will remain in place below a depth of 15 feet bgs or in crushed concrete used for backfill that contains PCBs below the remediation goal (at concentrations between 1 mg/kg and 3.5 mg/kg) do not pose a potential threat to groundwater at the Site. Therefore, no revisions to the Draft FS or RAP are necessary.</p> </li> </ul>
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DTSC REVIEWED DOCUMENTS	RESPONSE
ENG #6. FS section 4.3.2. The “concentration” of pure phase PCBs is not 1x10 <sup>6</sup> mg/L. The specific gravity of PCBs is approximately 1.4 and 1.5 ( <i>The Condensed Chemical Dictionary, Tenth Edition</i> , Gessner G. Hawley, 1981).	Because we repeated the simulations using the approach suggested by DTSC as described above in our response to engineering comment ENG #5, the calculated PCB concentrations in the source zone do not need to be compared to pure phase PCBs. No revisions to the Draft FS or RAP are necessary.
ENG #7. FS Section 6.3.2, second paragraph, 6 <sup>th</sup> line, should the total Aroclor concentration be less than 23 mg/kg, which is the remediation goal, instead of 25 mg/kg?	The text in Section 6.3.2 will be updated to reflect the remediation goals of 23 mg/kg.
ENG #8. RAP Section 7.3.2. It is not clear why the well lateral spacing for the deeper SVE wells is greater than twice the estimated radius of influence. How was the well spacing calculated for both the shallow and deep SVE wells?	As described in the Section 7.3.2 of the Draft RAP ( <b>see TAB 17</b> ), the anticipated radius of influence, although conservatively estimated as 60 feet for the shallow zone and 85 feet for the deep zone, are based on professional judgment, and our experience at other sites with similar lithology (coarse-grained soils composed of sand). The lateral well spacing listed in Section 7.3.2 was not used as the design criteria for well spacing and/or radius of influence and it will be removed from the Draft RAP. The deeper SVE screens proposed at 80 to 90 feet were placed in a zone to target the coarse-grained soils (sand) beneath the fine-grained zone (i.e. clay) observed at a depth of 47 to 65 feet below grade. The location of the deeper wells was based on soil data collected below the fine grained unit. As further described in Section 7.3.2, an evaluation of the effective area of influence will be performed after the installation of the SVE wells, and based on the results, additional SVE wells may be added.

1 Haasbeek, J.F., 1994, Effects of Cosolvency in the Fate and Transport of PCBs in Soil, Remediation, Summer.  
2 Rao, P.S.C., L.S. Lee, and R. Pinal, 1990, Cosolvency and Sorption of Hydrophobic Organic Chemicals, Environmental Science & Technology, 24, 647-654  
3 Pinal, R., P.S.C. Rao, L.S. Lee, and P.V. Cline, 1990, Cosolvency of Partially Miscible Organic Solvents on the Solubility of Hydrophobic Organic Chemicals, 24, 639-647.



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DTSC HERO GENERAL COMMENTS	RESPONSE
HERO GP #1. The Remedial Action Plan is generally well written but contains sections which require some revision for purposes of clarification. A number of specific comments are provided below to aid in revision of the document.	Comment noted.
HERO GP #2. The issue of clean up goals for non-PCB COCs requires clarification. The DTSC point of departure for clean up goals is generally $1 \times 10^{-6}$ for the appropriate receptor scenario based on future land use of the site. This level of stringency may be modified by the DTSC risk management team based on site specific conditions. The issue of co-located contaminants is not addressed. RBSLs for co-located COPCs must be adjusted to lower concentrations to account for cumulative exposure.	As described in the response to Specific HERO Comment #2 below, $10^{-5}$ was established as an acceptable target risk level for cumulative chemical exposure related to commercial/industrial re-use of the Pechiney site by the DTSC risk management team (Michel Iskarous) with the issuance of a land use deed covenant. This target risk level was set in coordination with U.S. EPA risk management team responsible for approval of the risk-based application for PCBs (Carmen Santos and Patrick Wilson) during a conference call held with DTSC and U.S. EPA on April 27, 2010. Furthermore, the issue of co-located contaminants in the development of site-specific remediation goals is presented in detail in Section 5.2 of the Draft FS (see response to Specific HERO Comment #2 below for more information, and <b>TAB 8</b> ). Therefore, no further adjustment to the RBSLs or remediation goals is required.
HERO GP #3. This document contains several references to the risk management range for cancer risk and noncancer hazard index. It should be noted that the DTSC point of departure as stated above is $10^{-6}$ in contrast to the $10^{-6}$ to $10^{-4}$ risk management range for USEPA projects. Care should be exercised such that the DTSC and USEPA risk management criteria are not confused.	As suggested in the response to Specific HERO Comment #1 below, the text of the Remedial Action Plan (RAP) will be revised to reference cancer risks relative to the DTSC point of departure ( $1 \times 10^{-6}$ ) rather than cancer risks relative to the upper end of the U.S. EPA risk management range ( $1 \times 10^{-4}$ ).
DTSC HERO SPECIFIC COMMENTS	RESPONSE
HERO #1. <u>Section 5.2 Embedded Table presenting Cancer Risks and Noncancer HIs</u> : This embedded table would benefit from a title. It should be noted that the DTSC point of departure for cancer risk is $1 \times 10^{-6}$ for each appropriate receptor. This table uses bold type to highlight cancer risks and noncancer HIs above regulatory risk management ranges, however the risk management range that is used is the USEPA risk management range of $1 \times 10^{-4}$ for cancer risk. Because the DTSC is the lead agency for non-TSCA waste, i.e., all contaminants which are not PCBs, the table should be revised to be consistent with the DTSC risk management criteria, which includes all contamination resulting in a risk greater than $1 \times 10^{-6}$ . By DTSC standards, Phases I, II, IIIa, IV and VI fail the risk management criteria for cancer risk and all Phases except Phase V are above the HI of 1 for at least one receptor. The text in this section also contains a mix of USEPA and DTSC terminology for risk management and requires revision to achieve accuracy. An embedded table would be appropriate and aid in the review of the discussion of the detected Aroclor concentrations and the phase areas. Please make the appropriate revisions.	<p>As suggested, the embedded table referenced in the comment will be updated with the same title used for Table 19 of the Draft FS - "Summary of Maximum Predicted Lifetime Excess Cancer Risks and Noncancer Hazard Indexes – Cumulative Soil and Soil Vapor Exposure" (<b>see TAB 11</b>).</p> <p>The risk management range cited in the Draft RAP and FS and used to bold the elements of the embedded table was acceptable to DTSC during previous iterations of these documents. But for the purpose of clarification, the embedded table and supporting text in the section will be revised to highlight cumulative cancer risks greater than the DTSC point of departure (<math>1 \times 10^{-6}</math>) rather than cancer risks greater than the upper end of the U.S. EPA risk management range (<math>1 \times 10^{-4}</math>).</p> <p>In addition, a separate embedded table will be provided in the Draft RAP to summarize the results of the separate risk-based screening of PCBs in concrete. This table will present the maximum detected concentrations of the Aroclor mixtures in each Phase area, compared to the cancer-based and noncancer-based RBSLs for these Aroclors as estimated and presented in Section 4.2 of the Draft FS (<b>see TAB 4</b>).</p>



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DTSC HERO GENERAL COMMENTS	RESPONSE
<p><b>HERO #2. Section 5.4. Summary of Site-Specific Remediation Goals:</b> This section (and Appendix C with the same title) should contain a discussion of how RBSLs will be modified to account for co-located COPCs. RBSLs for co-located COPCs must be adjusted to lower concentrations to account for cumulative exposure. HERO recommends a ratio sum method such as that described in the Office of Environmental Health Hazard Assessment (OEHHA) California Human Health Screening Levels (CHHSLs) guidance should be presented [OHHEA, 2005. Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil.] In addition, RBSLs for shallow soil vapor should be presented in terms of <math>\mu\text{g}/\text{m}^3</math> not <math>\mu\text{g}/\text{L}</math> since the derivation of the RBSLs is based on the methodology of the CHHSLs guidance which uses the units <math>\mu\text{g}/\text{m}^3</math>. It is not clear why the RBSLs for PCE and TCE are so much greater than the default values for a <math>10^{-6}</math> risk level for commercial/industrial workers. This discrepancy should be explained in greater detail. The default risk concentration for PCE in shallow soil vapor is <math>0.7 \mu\text{g}/\text{m}^3</math> in contrast to the RBSL of <math>7300 \mu\text{g}/\text{m}^3</math> and the default risk concentration for TCE is <math>2.0 \mu\text{g}/\text{m}^3</math> in contrast to the RBSL of <math>21,000 \mu\text{g}/\text{m}^3</math>. Is it possible that the units were mistakenly presented? Please clarify this issue. (TPH in Shallow and Deeper Soil) A cleanup goal of <math>10,000 \text{ mg}/\text{kg}</math> for c21-c28 hydrocarbons (residual fuel range hydrocarbons) is proposed. This number should be checked against any Regional Water Quality Control Board ARARs for this COPC to ensure that there is not conflict. A reference should be provided for the site-specific soil screening levels for the protection of groundwater. HERO assumes this means a Regional Water Quality Control Board standard.</p>	<p>For clarification, the appendix referenced in the comment is Appendix C of the Draft FS (<b>see TAB 13</b>), which is titled "Development of Risk-Based Screening Levels," not "Summary of Site-Specific Remediation Goals."</p> <p>As stated in Section 5.4 of the Draft RAP (<b>see TAB 15</b>), the development of the site-specific remediation goals is described in detail in Section 5.2 of the Draft FS (<b>see TAB 8</b>). Section 5.4 of the Draft RAP only presents a summary of the resulting remediation goals. Short explanations for how each value was established are provided in Tables 1A, 1B, and 1C of the Draft RAP (<b>see TAB 22</b>), but all of the details behind the development of each remediation goal, including how RBSLs were used as the basis for certain remediation goals and adjusted where necessary to lower concentrations to account for cumulative exposure, are provided in Section 5.2 of the Draft FS. Adjustments were made using a ratio sum method similar to that recommended in the comment (referring to OEHHA, 2005) to derive the remediation goals for all COCs in shallow soil vapor. Specifically, the remediation goals presented for chloroform, PCE, and TCE in shallow soil vapor (<math>6.7 \text{ micrograms per liter } [\mu\text{g}/\text{L}]</math>, <math>7.3 \mu\text{g}/\text{L}</math>, and <math>21 \mu\text{g}/\text{L}</math>, respectively) were derived by scaling their respective <math>10^{-6}</math> cancer-based RBSLs for indoor commercial/industrial worker exposure (<math>2.0 \mu\text{g}/\text{L}</math>, <math>2.2 \mu\text{g}/\text{L}</math>, and <math>6.3 \mu\text{g}/\text{L}</math>, respectively; see Table 3 of the Draft FS) to be protective of <math>10^{-5}</math> risk from cumulative exposure to all three VOCs.<sup>1</sup> These remediation goals are considered adequately protective of <math>10^{-5}</math> cumulative risk as no other carcinogenic VOCs were detected in shallow soil vapor at the site at significant concentrations (i.e., exceeding their respective <math>10^{-6}</math> cancer-based RBSLs for indoor commercial/industrial worker exposure). The additional remediation goals presented for TPH as Stoddard solvent, 1,2,4-TMB, and 1,3,5-TMB in shallow soil vapor (<math>500 \mu\text{g}/\text{L}</math>, <math>12.3 \mu\text{g}/\text{L}</math>, and <math>10.7 \mu\text{g}/\text{L}</math>, respectively) were derived in a similar fashion, but based on potential noncancer effects (i.e., scaling their respective noncancer-based RBSLs for indoor commercial/industrial worker exposure to be protective of a cumulative noncancer HI of 1).</p> <p>The "default risk concentrations for PCE and TCE in shallow soil vapor" provided in the comment for commercial/industrial workers, <math>0.7 \mu\text{g}/\text{m}^3</math> and <math>2.0 \mu\text{g}/\text{m}^3</math>, respectively, are actually the target indoor air concentrations used by OEHHA to derive the shallow soil vapor risk concentrations (i.e., CHHSLs) for these receptors, as listed in Tables B-9 and B-11 of the CHHSL guidance (OEHHA, 2005). The shallow soil vapor CHHSLs derived by OEHHA for future commercial/industrial buildings are actually <math>1.6 \mu\text{g}/\text{L}</math> and <math>4.4 \mu\text{g}/\text{L}</math>, respectively (Table B-9 of OEHHA, 2005), which are comparable to the shallow soil vapor RBSLs developed for the Pechiney site as presented in the Draft FS (<math>2.0 \mu\text{g}/\text{L}</math> and <math>6.3 \mu\text{g}/\text{L}</math>, respectively; see Table 3 of the Draft FS, <b>see TAB 10</b>). The minor differences between the shallow soil vapor CHHSLs and the shallow soil vapor RBSLs derived for the Pechiney site are based on the use of DTSC's default exposure parameters (in Human Health Risk Assessment Note 1; DTSC, 2005, updated 2011) in place of OEHHA parameters to calculate target indoor air concentrations/RBSLs. The use of DTSC's default exposure parameters was consistent with HERO recommendations (from Claudio Sorrentino, in his March 27, 2009 Memorandum to Michel Iskarous [DTSC, 2009]).</p> <p>A reference is provided for the site-specific soil screening levels for the protection of groundwater in Table 1B (<b>see TAB 22</b>). As listed, the remediation goals proposed for TPH in shallow and deeper soil, including the value of <math>10,000 \text{ mg}/\text{kg}</math> for c21-c28 hydrocarbons (residual fuel range hydrocarbons), are screening levels for the protection of groundwater taken from the Los Angeles Regional Water Quality Control Board (RWQCB) Guidebook (RWQCB, 1996, updated 2004), assuming a soil distance above groundwater of 20-150 feet. Compliance with applicable or relevant and appropriate requirements (ARARs) was evaluated in the Draft FS in Section 7.0 (<b>see TAB 9</b>).</p>

<sup>1</sup>  $10^{-5}$  was established as an acceptable target cumulative risk level for commercial/industrial re-use of the site by the DTSC risk management team (Michel Iskarous), in coordination with the U.S. EPA risk management team responsible for approval of the risk-based application for PCBs (Carmen Santos and Patrick Wilson).



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Vernon, California**

**References used in Responses**

Department of Toxic Substances Control (DTSC), 2005, Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Military Facilities, Human and Ecological Risk Division, HHRA Note Number 1, October 27.

DTSC, 2009, Memorandum from Claudio Sorrentino, Staff Toxicologist, Human and Ecological Risk Division (HERD) to Michel Iskarous, Site Mitigation Program, Comments on Feasibility Study/Remedial Action Plan, Former Pechiney Cast Plate, Inc., Facility, 3200 Fruitland Avenue, Vernon, California, dated 07/20/06 and revised 07/23/08, March 27.

DTSC, 2011, Recommended DTSC Default Exposure Factors for Use in Risk Assessment at California Hazardous Waste Sites and Permitted Facilities, Office of Human and Ecological Risk (HERO), HERO Human Health Risk Assessment (HHRA) Note Number: 1, Issue Date: May 20, 2011.

Office of Environmental Health and Hazard Assessment (OEHHA), 2005, Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, California Environmental Protection Agency, January.

Regional Water Quality Control Board (RWQCB) – Los Angeles Region, 1996, Interim Site Assessment & Cleanup Guidebook, Updated March 2004, May.



**Table 1**  
**VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**Former Pechiney Cast Plate, Inc. Facility**  
**Vernon, California**

*Results shown in micrograms per liter (µg/L)*

Sample or Well Number	Type of Sample	Status	Phase Area	Sample Date	1,1-Dichloroethene (1,1-DCE)	1,2-Dichloroethene	Benzene	Chloroform	Ethylbenzene	Tetrachloroethene (PCE)	Toluene	Trichloroethene (TCE)	Xylenes, total
California MCLs					6.0	0.5	1.0	NE	300	5.0	150	5.0	1750
U.S. EPA MCLs					7.0	5.0	5.0	80 <sup>1</sup>	700	5.0	1000	5.0	10000
#125 (149 feet)	HP	Backfilled	Phase I	04/11/06	<0.5	6.0	2.6	<0.5	0.85	<0.5	2.9	72	5.9
#125 (150 feet)	HP	Backfilled	Phase I	04/11/06	<0.5	4.5	3.3	<0.5	14	0.95	29	110	81
#126 (149 feet)	HP	Backfilled	Phase I	04/12/06	1.2	<0.5	<0.5	0.57	<0.5	4.6	<0.5	420	--
#132 (150 feet)	HP	Backfilled	Phase I	05/17/06	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	150	--
#133 (150 feet)	HP	Backfilled	Phase I	05/18/06	<0.5	<0.5	<0.5	1.8	<0.5	1.5	<0.5	150	--
#134 (149.5 feet)	HP	Backfilled	Phase I	05/22/06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	110	--
AOW-1	Well Sample	Destroyed	Phase VI	06/18/90	--	ND <sup>2</sup>	--	ND <sup>2</sup>	--	--	--	79	ND
				08/03/90	--	ND	--	ND	--	--	--	81	ND
				09/14/90	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	94	<1.0
				01/04/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	99	<1.0
				01/14/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	160	<1.0
				02/05/92	--	ND	--	ND	--	--	--	140	ND
				05/13/93	--	ND	--	ND	--	--	--	160	ND
				12/08/94	--	ND	--	ND	--	--	--	160	ND
				04/17/96	--	ND	--	ND	--	--	--	152	ND
				06/05/97	--	ND	--	ND	--	--	--	99	ND
AOW-2 <sup>2</sup>	Well Sample	Destroyed	East of Phase VI	06/18/90	--	ND	--	ND	--	--	--	ND <sup>2</sup>	ND
				08/03/90	--	ND	--	ND	--	--	--	ND	ND
				09/14/90	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				01/04/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				01/14/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				02/05/92	--	ND	--	ND	--	--	--	ND	ND
				05/13/93	--	ND	--	ND	--	--	--	ND	ND
				12/08/94	--	ND	--	ND	--	--	--	ND	ND
				04/17/96	--	ND	--	ND	--	--	--	ND	ND
				06/05/97	--	ND	--	ND	--	--	--	ND	ND
AOW-3	Well Sample	Destroyed	Phase II/b	06/18/90	--	270	--	63	--	--	--	22	ND
				08/03/90	--	330	--	63	--	--	--	27	ND
				09/14/90	<3.0	360	<3.0	74	<3.0	<3.0	<3.0	20	<3.0
				01/04/91	<3.0	410	<3.0	83	<3.0	<3.0	<3.0	25	<3.0
				01/14/91	<3.0	370	<3.0	66	<3.0	<3.0	<3.0	18	<3.0
				02/05/92	--	270	--	60	--	--	--	22	ND
				05/13/93	--	240	--	66	--	--	--	22	ND
				12/08/94	--	240	--	56	--	--	--	23	ND
				04/17/96	--	126	--	21	--	--	--	14	ND
				06/05/97	--	36	--	51	--	--	--	12	ND
AOW-4 <sup>3</sup>	Well Sample	Destroyed	East of Phase VI	09/14/90	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	200	<1.0
				01/04/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	180	<1.0
				01/14/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	220	<1.0
				02/05/92	--	ND	--	ND	--	--	--	170	ND
				05/13/93	--	ND	--	ND	--	--	--	110	ND
				12/08/94	--	ND	--	ND	--	--	--	120	ND
				04/17/96	--	ND	--	ND	--	--	--	ND	ND
				06/05/97	--	ND	--	ND	--	--	--	98	ND
AOW-5 <sup>2</sup>	Well Sample	Destroyed	East of Phase VI	09/14/90	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3	<1.0
				01/04/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				01/14/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				02/05/92	--	ND	--	ND	--	--	--	ND	ND
				05/13/93	--	ND	--	ND	--	--	--	ND	ND
				12/08/94	--	ND	--	ND	--	--	--	ND	3.6
				04/17/96	--	ND	--	ND	--	--	--	ND	ND
				06/05/97	--	ND	--	ND	--	--	--	ND	4
AOW-6	Well Sample	Active	Phase VI	09/14/90	--	ND	--	ND	--	--	--	ND	ND
				01/04/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				01/14/91	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				02/05/92	--	ND	--	ND	--	--	--	ND	ND
				05/13/93	--	ND	--	ND	--	--	--	ND	ND
				12/08/94	--	ND	--	ND	--	--	--	ND	ND
				04/17/96	--	ND	--	ND	--	--	--	ND	ND
				06/05/97	--	ND	--	ND	--	--	--	ND	ND
				12/27/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				06/28/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				5/31/11**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0



**Table 1**  
**VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER**  
**Former Pechiney Cast Plate, Inc. Facility**  
**Vernon, California**

*Results shown in micrograms per liter (µg/L)*

Sample or Well Number	Type of Sample	Status	Phase Area	Sample Date	1,1-Dichloroethene (1,1-DCE)	1,2-Dichloroethene	Benzene	Chloroform	Ethylbenzene	Tetrachloroethene (PCE)	Toluene	Trichloroethene (TCE)	Xylenes, total
California MCLs					6.0	0.5	1.0	NE	300	5.0	150	5.0	1750
U.S. EPA MCLs					7.0	5.0	5.0	80 <sup>1</sup>	700	5.0	1000	5.0	10000
AOW-7	Well Sample	Destroyed	Phase IIIa	01/04/91	<1.0	23	<1.0	22	<1.0	<1.0	<1.0	3	<1.0
				01/14/91	<1.0	160	<1.0	88	<1.0	<1.0	<1.0	14	<1.0
				02/05/92	--	200	--	93	--	--	--	21	ND
				05/13/93	--	150	--	64	--	--	--	18	ND
				12/08/94	--	160	--	77	--	--	--	19	ND
				04/17/96	--	97	--	105	--	--	--	15	ND
				06/05/97	--	78	--	74	--	--	--	13	ND
AOW-8	Well Sample	Active	Phase IIIb	01/04/91	<1.0	140	<1.0	5	<1.0	<1.0	<1.0	2	<1.0
				01/14/91	<1.0	280	<1.0	6	<1.0	<1.0	<1.0	17	<1.0
				02/05/92	--	220	--	7	--	--	--	13	ND
				05/13/93	--	93	--	9.2	--	--	--	10	ND
				12/08/94	--	42	--	2.5	--	--	--	4.9	ND
				12/08/94	--	46	--	3.0	--	--	--	6.5	ND
				04/18/96	--	5	--	1.0	--	--	--	5	ND
				04/18/96	--	4	--	ND	--	--	--	4	ND
				06/06/97	--	15	--	12	--	--	--	2	ND
				12/27/05	<1.0	5.0	<1.0	6.8	<1.0	<1.0	<1.0	33	<1.0
				12/27/05 (DUP)	<1.0	5.2	<1.0	7.0	<1.0	<1.0	<1.0	33	<1.0
				06/28/06	<1.0	6.1	<1.0	8.6	<1.0	<1.0	<1.0	28	<1.0
				6/28/06 (DUP)	<1.0	6.3	<1.0	8.7	<1.0	<1.0	<1.0	29	<1.0
				5/31/11**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
AOW-9	Well Sample	Active	Phase IV	5/31/11 (DUP)**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
				01/04/91	<1.0	15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				01/14/91	<1.0	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
				02/05/92	--	6	--	ND	--	--	--	ND	ND
				05/13/93	--	4	--	ND	--	--	--	ND	ND
				12/08/94	--	2.9	--	ND	--	--	--	ND	ND
				04/17/96	--	ND	--	2	--	--	--	ND	ND
				06/05/97	--	44	--	19	--	--	--	5	ND
				12/27/05	<1.0	4.3	<1.0	9.1	<1.0	<1.0	<1.0	3.1	<1.0
				06/28/06	<1.0	4.4	<1.0	11	<1.0	<1.0	<1.0	3.6	<1.0

**Notes:**

1. Limit shown is for the sum of chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

2. The term "ND" is used to denote approximate laboratory reporting limits for the following compounds: 2 µg/L for trichloroethene; 2 µg/L for 1,2-dichloroethene; 2 µg/L for chloroform; 5 µg/L for methylene chloride; and 2 µg/L for total xylenes. Laboratory reports are not available to confirm the precise reporting limit.

3. Groundwater monitoring wells AOW-2, AOW-4, and AOW-5 are located on the eastern portion of the Alcoa facility that was previously sold and redeveloped.

\*Indicates that the sample result was noted as "cross contamination probable" in documents reviewed.

\*\*Samples also were analyzed for Perchlorate using EPA Method 314.0 as part of a DTSC request; perchlorate results for these samples were non-detect (detected below the laboratory reporting limit of 2.0 µg/L).

< = not detected at or above the reporting limit shown.

-- = not analyzed or laboratory analytical reports are unavailable.

HP = Hydropunch

MCL = Maximum Contaminant Level

ND = not detected.

NE = not established

DUP = duplicate groundwater sample

BOLD = concentration exceeds one or more of the screening levels.



**Table 2**  
**PHASE I - VOLATILE ORGANIC COMPOUNDS IN SOIL VAPOR**  
**Former Pechiney Cast Plate, Inc. Facility**  
**Vernon, California**

*Results shown in micrograms per liter (µg/L)*

Sample Location	Sample Depth (Feet bgs)	Sample Date	EPA Method	1,1,1-Trichloroethane (1,1,1-TCA)	1,1-Dichloroethene (1,1-DCE)	Chloroform	Tetrachloroethene (PCE)	Trichloroethene (TCE)
#2B	5	11/15/05	8260M	<0.5	<0.5	<0.5	<0.5	<0.5
#2B	15	11/15/05	8260M	<0.5	<0.5	<0.5	<0.5	<0.5
#3	5	11/14/05	8260M	<2	<2	<2	28	780
#3	15	11/14/05	8260M	<5	<5	<5	46	1400
#4	5	11/15/05	8260M	<0.5	<0.5	<0.5	1.1	14
#4	15	11/15/05	8260M	<0.5	<0.5	<0.5	<0.5	5.7
#5	5	11/15/05	8260M	<0.5	<0.5	<0.5	<0.5	4.2
#5	15	11/15/05	8260M	<0.5	<0.5	<0.5	<0.5	14
#7	5	11/15/05	8260M	<5	<5	<5	<5	220
#7	15	11/15/05	8260M	<0.5	<0.5	<0.5	1.8	100
#8	5	12/01/05	8260M	<1	<1	<1	<1	130
#8	15	12/01/05	8260M	<4	<4	<4	<4	160
#9	5	11/14/05	8260M	<1	<1	1.6	8	310
#9	15	11/14/05	8260M	1.6	1.8	2.3	12	590
#10	5	11/15/05	8260M	<10	<10	<10	<10	490
#10	15	11/15/05	8260M	<5	<5	<5	29	1100
#11	5	11/14/05	8260M	<5	<5	<5	<5	350
#11	15	11/14/05	8260M	<5	<5	<5	40	1100
#12	5	11/14/05	8260M	3.8	10	<1	44	1200
#12	15	11/14/05	8260M	<10	15	<10	68	1600
#16A	15	11/14/05	8260M	<1	<1	<1	2	5.6
#16B	5	12/01/05	8260M	<0.2	<0.2	<0.2	0.94	3.4
#78	5	04/20/06	8260M	<5	<5	<5	<5	40
#78	15	04/20/06	8260M	<2	<2	<2	6.2	140
#79	5	04/20/06	8260M	<2	<2	<2	8	130
#79	15	04/20/06	8260M	<2	3.5	<2	22	420
#80	5	04/19/06	8260M	<10	<10	<10	30	550
#80	15	04/19/06	8260M	<10	<10	<10	49	900
#81	5	04/20/06	8260M	8	14	<5	110	1400
#81	15	04/19/06	8260M	10	19	<10	120	1900
#82	5	04/24/06	8260M	7	12	<5	49	970
#82	15	04/24/06	8260M	13	22	<10	120	1900
#83	5	04/19/06	8260M	<10	<10	<10	13	170
#83	15	04/24/06	8260M	<5	<5	<5	29	360
#84	5	04/19/06	8260M	<1	1.1	<1	11	100
#84	15	04/24/06	8260M	<2	2.9	<2	25	250



**Table 2**  
**PHASE I - VOLATILE ORGANIC COMPOUNDS IN SOIL VAPOR**  
**Former Pechiney Cast Plate, Inc. Facility**  
**Vernon, California**

*Results shown in micrograms per liter (µg/L)*

Sample Location	Sample Depth (Feet bgs)	Sample Date	EPA Method	1,1,1-Trichloroethane (1,1,1-TCA)	1,1-Dichloroethene (1,1-DCE)	Chloroform	Tetrachloroethene (PCE)	Trichloroethene (TCE)
#85	5	04/18/06	8260M	<5	<5	<5	<5	88
#85	15	04/18/06	8260M	<2	<2	<2	13	350
#86	5	04/18/06	8260M	<1	<1	<1	15	310
#86	15	04/18/06	8260M	<1	1.5	1.1	11	290
#87	5	04/18/06	8260M	<2	<2	2.5	28	600
#87	15	04/18/06	8260M	<5	<5	<5	32	740
#88	5	04/18/06	8260M	<4	<4	<4	15	310
#88	15	04/18/06	8260M	<5	<5	<5	18	390
#89	5	04/19/06	8260M	<1	<1	<1	1.1	<1
#89	15	04/19/06	8260M	<0.2	<0.2	<0.2	1.3	1.5
#90	5	04/19/06	8260M	<0.1	<0.1	<0.1	0.97	1.2
#90	15	04/19/06	8260M	<0.1	<0.1	<0.1	0.14	<0.1
#91	5	04/19/06	8260M	<0.1	<0.1	<0.1	0.73	2
#91	15	04/19/06	8260M	<0.1	<0.1	<0.1	1.1	4.8
#130	5	04/20/06	8260M	4.1	8.2	<2	49	730
#130	15	04/20/06	8260M	<10	15	<10	95	1500
#131	5	04/20/06	8260M	<0.5	0.78	<0.5	7.2	73
#131	15	04/20/06	8260M	<1	2.3	<1	18	200
#136	5	05/16/06	8260M	<0.2	<0.2	<0.2	0.93	18
#136	15	05/16/06	8260M	<0.5	0.6	<0.5	7.2	130
#137	5	05/16/06	8260M	<0.1	<0.1	<0.1	0.34	8.3
#137	15	05/16/06	8260M	<0.2	<0.2	<0.2	1.8	39
#138	5	05/16/06	8260M	<0.1	<0.1	<0.1	0.13	1
#138	15	05/16/06	8260M	<0.1	<0.1	<0.1	0.3	5.4
#139	5	05/16/06	8260M	<0.1	<0.1	<0.1	<0.1	0.25
#139	15	05/16/06	8260M	<0.1	<0.1	<0.1	<0.1	<0.1
#140	5	05/15/06	8260M	<0.5	<0.5	<0.5	<0.5	3.1
#140	15	05/15/06	8260M	<0.1	<0.1	<0.1	0.31	5.4
#141	5	05/16/06	8260M	<0.2	<0.2	<0.2	0.22	5.5
#141	15	05/16/06	8260M	<0.2	<0.2	<0.2	0.81	21
#142	5	05/15/06	8260M	<0.1	<0.1	<0.1	0.26	3.8
#142	15	05/15/06	8260M	<0.1	<0.1	<0.1	0.66	14
#143	5	05/15/06	8260M	<0.2	<0.2	<0.2	3.3	74
#143	15	05/15/06	8260M	<1	<1	<1	4.1	130
#144	5	05/15/06	8260M	<0.2	<0.2	<0.2	0.35	13
#144	15	05/15/06	8260M	0.24	<0.2	0.51	4.1	82



**Table 2**  
**PHASE I - VOLATILE ORGANIC COMPOUNDS IN SOIL VAPOR**  
**Former Pechiney Cast Plate, Inc. Facility**  
**Vernon, California**

*Results shown in micrograms per liter (µg/L)*

Sample Location	Sample Depth (Feet bgs)	Sample Date	EPA Method	1,1,1-Trichloroethane (1,1,1-TCA)	1,1-Dichloroethene (1,1-DCE)	Chloroform	Tetrachloroethene (PCE)	Trichloroethene (TCE)
#145	5	05/15/06	8260M	<0.2	<0.2	<0.2	<0.2	1.7
#145	15	05/15/06	8260M	<0.1	<0.1	<0.1	0.48	9.1
#146	5	05/15/06	8260M	0.15	<0.1	0.39	2.4	38
#146	15	05/15/06	8260M	<0.5	<0.5	0.81	3.4	92
#161 <sup>1</sup>	5	07/08/09	8260M	<20	<20	<20	27	430
#161	15 <sup>2</sup>	07/08/09	8260M	1.6	4.5	1.6	50 E <sup>3</sup>	74 E <sup>2</sup>
#161	15 <sup>2</sup>	07/08/09	8260M	<10	<10	<10	140	1300
#161	15 <sup>2</sup>	07/08/09	8260M	<20	<20	<20	200	2100
#162	5	07/09/09	8260M	<20	<20	<20	59	450
#162	5	07/09/09	8260M	<10	<10	<10	59	390
#162	15	07/09/09	8260M	<20	<20	<20	87	650
#163	5	07/09/09	8260M	<20	<20	<20	360	730
#163	15	07/09/09	8260M	22	<20	<20	850	1600
#164	5	07/09/09	8260M	<20	<20	<20	110	350
#164	15	07/09/09	8260M	<20	<20	<20	190	610
#164	15	07/09/09	TO-15	<16	18	<16	220	630

**Notes:**

1. Sampling points #161 through #164 are located off-site, northwest of Building 106 at the intersection of Fruitland and Boyle Avenues.

2. Purge volume test results; 1, 3, and 7 purge volumes.

3. The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate with an E qualifier.

< = not detected at or above the laboratory reporting limit shown.

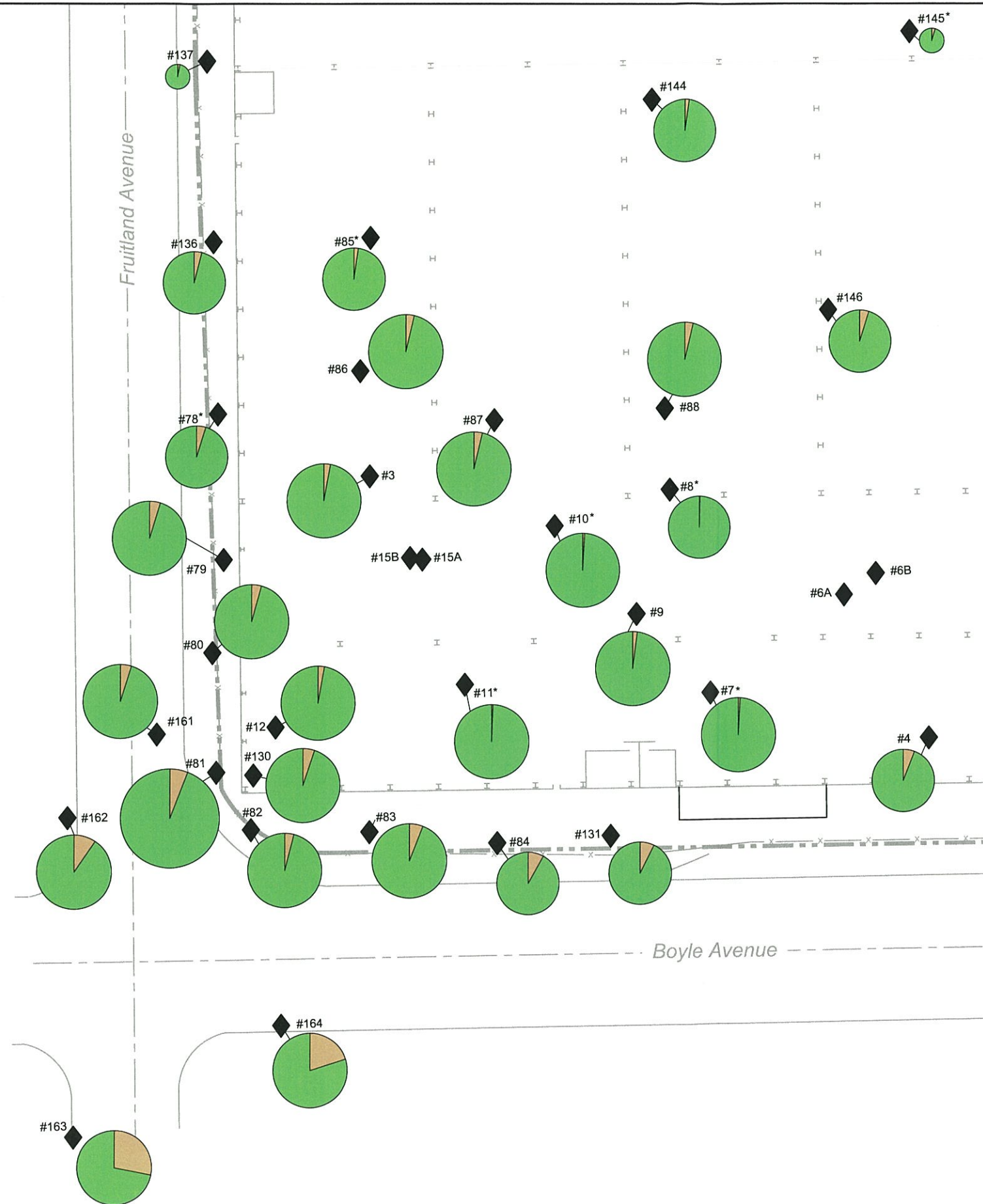
bgs = below ground surface







Plot Date: 03/13/12 - 2:09pm, Plotted by: pat.herring  
Drawing Path: Y:\10627.003\06a\06a\Reports\_2012\Letter\_031412\ Drawing Name: pce-tce pie charts.dwg



### Explanation

#164 ♦ Geomatrix soil vapor sampling point

--- Property boundary

----- Phasing area boundary

Total molar concentration of  
tetrachloroethene (PCE) and  
trichloroethene (TCE) in soil vapor at  
5 feet below ground surface

○ <0.1

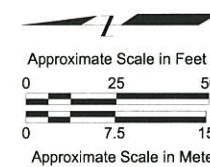
○ ≥0.1 and <1.0

○ ≥1.0 and <10

○ ≥10

Ratio of molar concentration of PCE  
to TCE

#78\* ♦ PCE or TCE concentration was  
below the detection limit; ratio  
calculated using 0.5 of the report  
limit



Basemap modified from Pechiney Cast Plate, Inc. Site Plan dated January 8, 2002,  
Geraghty & Miller, Inc. "Groundwater Elevation and Volatile Organic Compound  
Concentrations December 8, 1994" Figure dated February 2, 1995, Aluminum  
Company of America "Works General-Map" figure dated October 10, 1984, and Los  
Angeles County Assessor's Office Parcel Map 6310 / Sheet 8 dated November 5, 1958.

DISTRIBUTION OF PCE TO TCE  
IN SOIL VAPOR AT 5 FEET  
Former Pechiney Cast Plate, Inc., Facility  
3200 Fruitland Avenue  
Vernon, California

By: pah

Date: 03/13/12

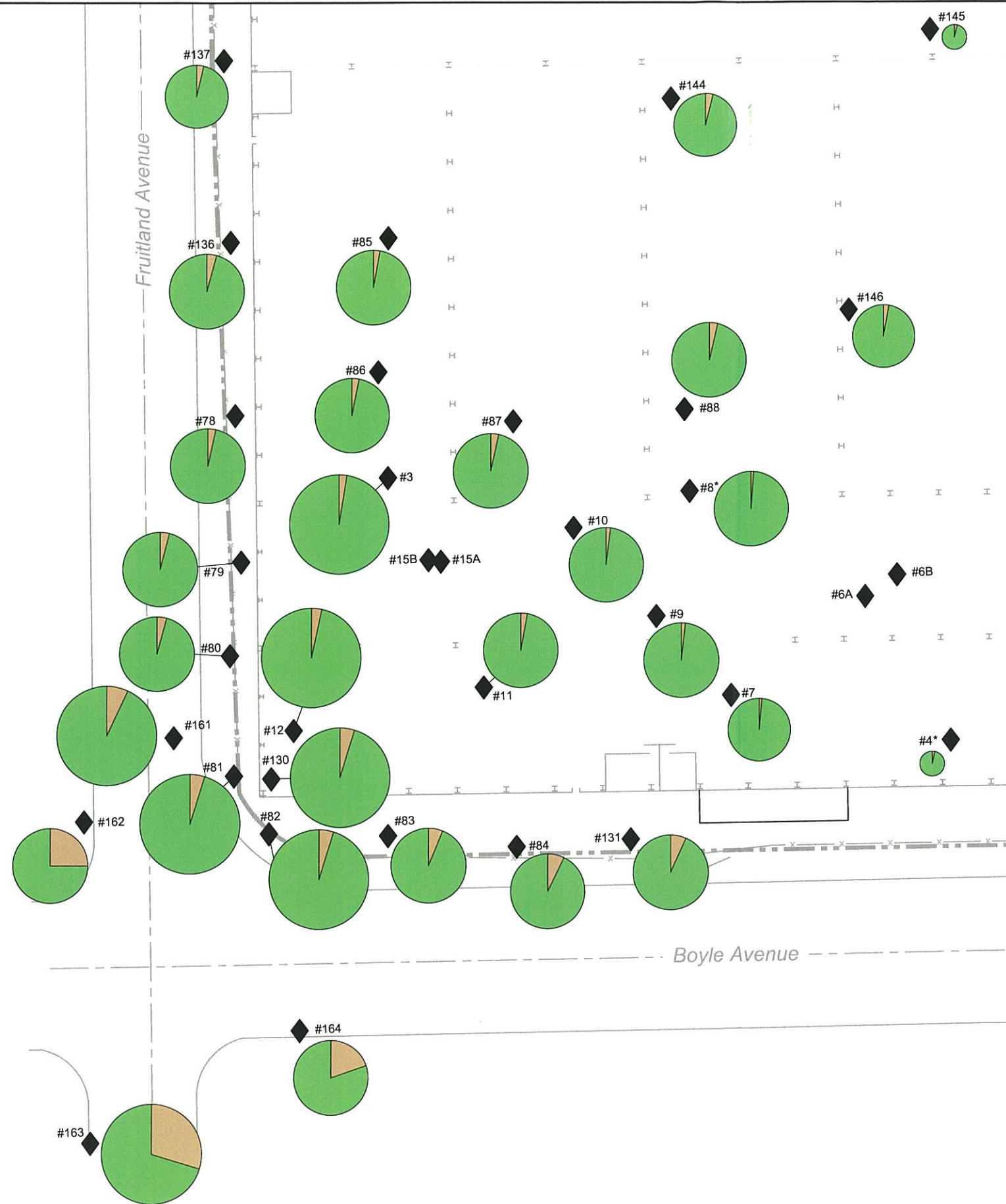
Project No.16027.003.0

amec

Figure 2

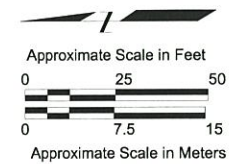


Plot Date: 03/13/12 - 2:08pm, Plotted by: pat.herring  
Drawing Path: Y:\10627.003\acadi\Reports\_2012\Letter\_031412, Drawing Name: pce-tce pie charts.dwg



## Explanation

- #164 ◆ Geomatrix soil vapor sampling point
- Property boundary
- ..... Phasing area boundary
- Total molar concentration of tetrachloroethene (PCE) and trichloroethene (TCE) in soil vapor at 15 feet below ground surface
- <0.1
- ≥0.1 and <1.0
- ≥1.0 and <10
- ≥10
- Ratio of molar concentration of PCE to TCE
- #4\* ◆ PCE or TCE concentration was below the detection limit; ratio calculated using 0.5 of the report limit



Basemap modified from Pechiney Cast Plate, Inc. Site Plan dated January 8, 2002, Geraghty & Miller, Inc. "Groundwater Elevation and Volatile Organic Compound Concentrations December 8, 1994" Figure dated February 2, 1995, Aluminum Company of America "Works General-Map" figure dated October 10, 1984, and Los Angeles County Assessor's Office Parcel Map 6310 / Sheet 8 dated November 5, 1958.

DISTRIBUTION OF PCE TO TCE  
IN SOIL VAPOR AT 15 FEET  
Former Pechiney Cast Plate, Inc., Facility  
3200 Fruitland Avenue  
Vernon, California

By: pah Date: 03/13/12 Project No. 16027.003.0



Figure 3

Table 3  
Modeling Layers and Percent Saturation

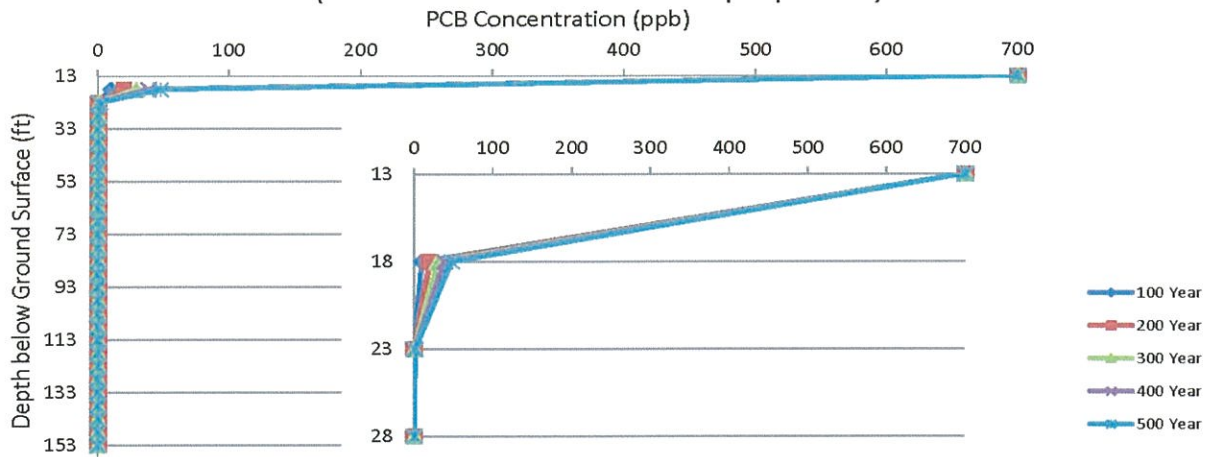
Layer	Initial Percent Saturation
1	17.4%
2	15.4%
3	9.5%
4	12.0%
5	9.0%
6	13.2%
7	11.3%
8	12.9%
9	13.2%
10	16.4%
11	36.6%
12	66.5%
13	62.3%
14	12.9%
15	14.2%
16	14.6%
17	17.1%
18	46.1%
19	10.4%
20	11.0%
21	24.6%
22	53.9%
23	34.3%
24	12.0%
25	58.1%
26	12.0%
27	12.0%
28	13.4%
29	12.0%
30	22.5%



### Simulated PCB Concentration Profiles over Time

PCBs in soil at 15 feet bgs

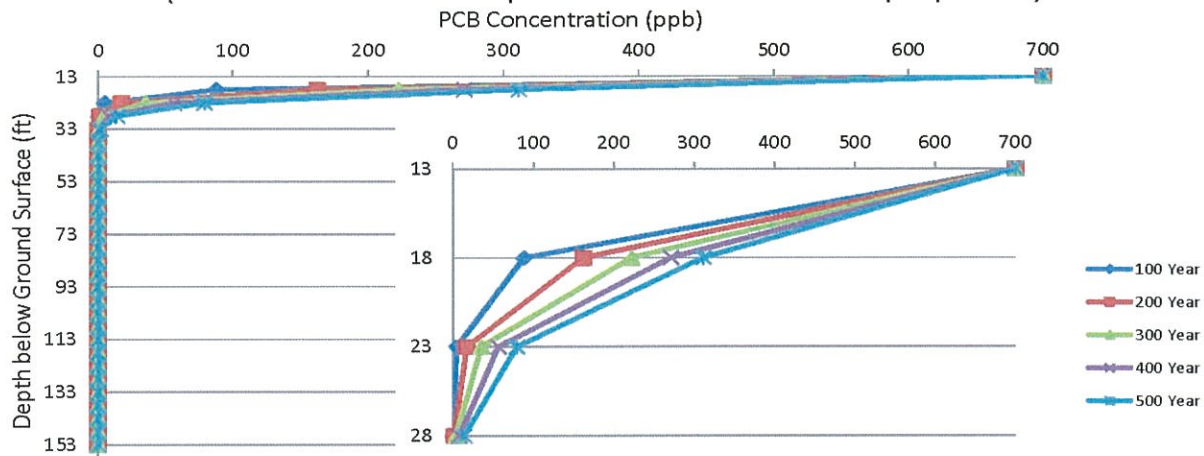
(retardation factor based on properties)



### Simulated PCB Concentration Profiles over Time

PCBs in soil at 15 feet bgs

(retardation factor = 10 percent of value based on properties)



SIMULATED PCB CONCENTRATION  
PROFILES AT 15 FEET BGS  
Former Pechiney Cast Plate, Inc. Facility  
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By: SEH

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Project No.: 10627.003



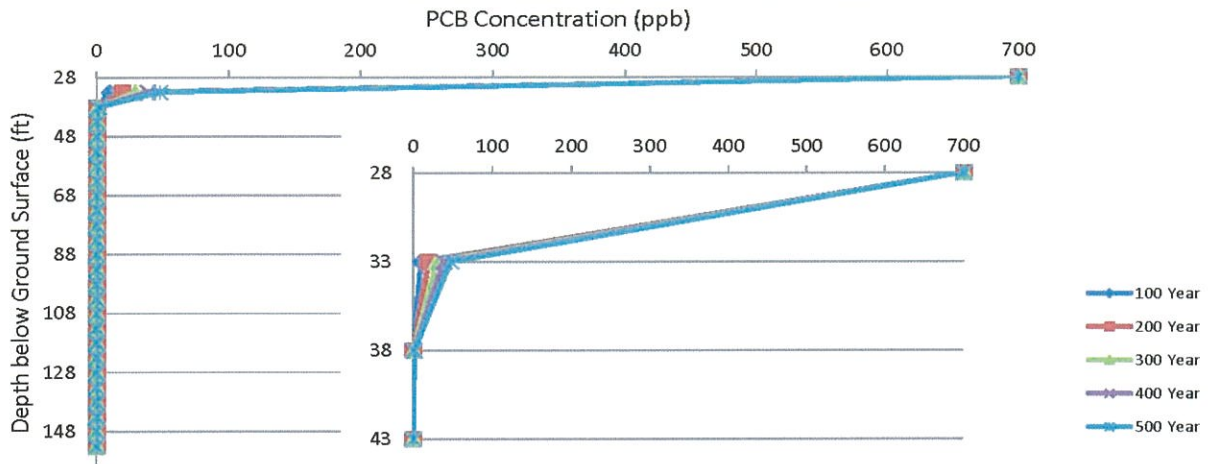
Figure

4

### Simulated PCB Concentration Profiles over Time

PCBs in soil at 30 feet bgs

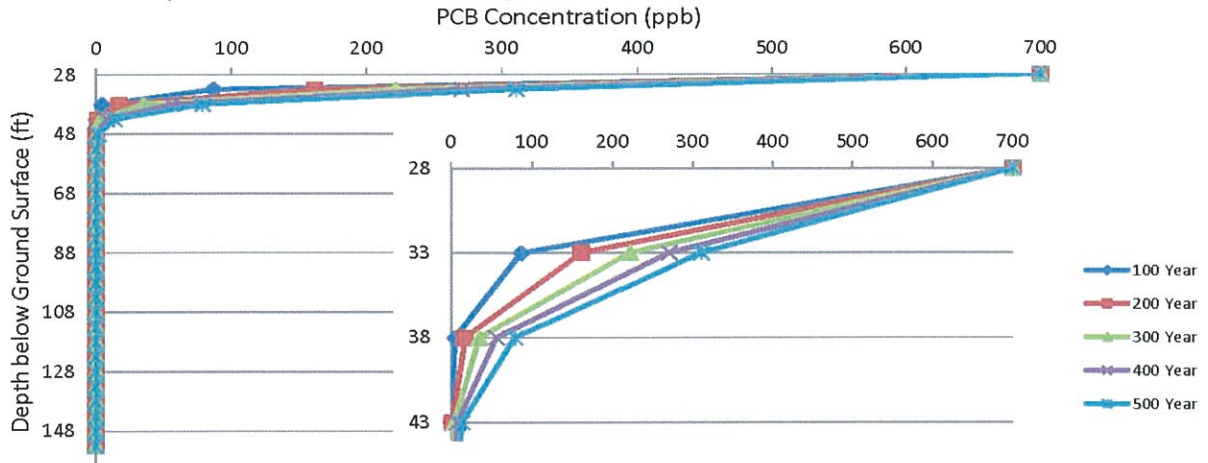
(retardation factor based on properties)



### Simulated PCB Concentration Profiles over Time

PCBs in soil at 30 feet bgs

(retardation factor = 10 percent of value based on properties)



SIMULATED PCB CONCENTRATION  
PROFILES AT 30 FEET BGS  
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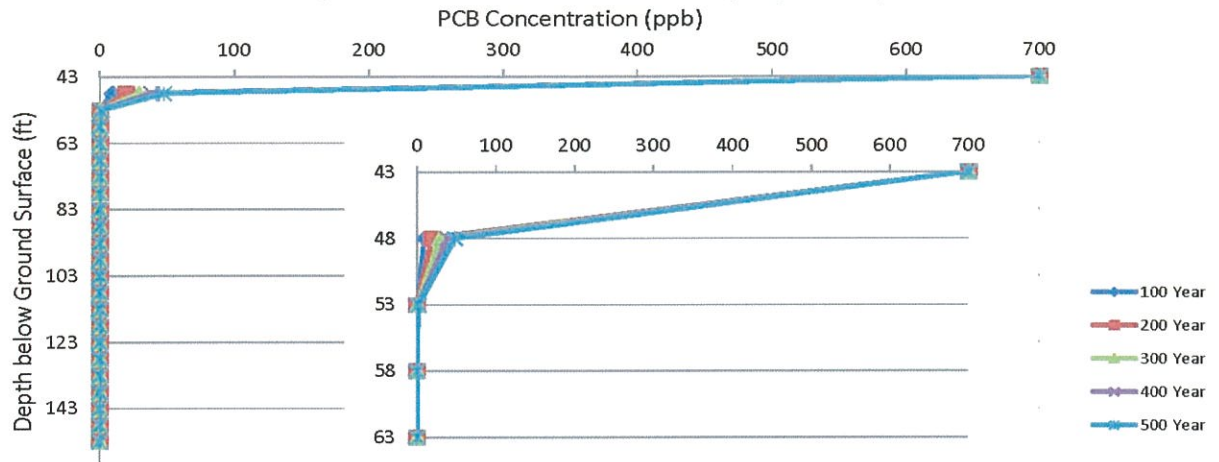
amec

Figure

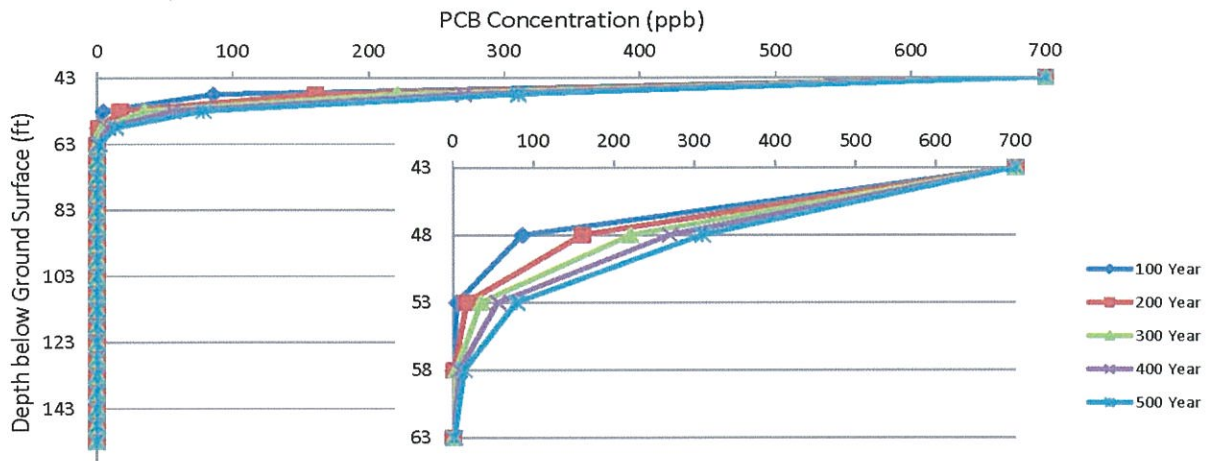
5



Simulated PCB Concentration Profiles over Time  
PCBs in soil at 45 feet bgs  
(retardation factor based on properties)



Simulated PCB Concentration Profiles over Time  
PCBs in soil at 45 feet bgs  
(retardation factor = 10 percent of value based on properties)



SIMULATED PCB CONCENTRATION  
PROFILES AT 45 FEET BGS  
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3200 Fruitland Avenue  
Vernon, California

By: SEH

Date: 03/15/12

Project No.: 10627.003

amec

Figure

6